

Bourne's Pond Subwatershed Falmouth, Cape Cod, Massachusetts

The Bourne's Pond Subwatershed is located in East Falmouth. It has an area of 2,246 acres. Route 28 crosses the subwatershed. The area south of Route 28 is more densely developed residentially than the area to the north. The subwatershed extends north into the Massachusetts Military Reservation. It has been projected that at build-out, Bourne's Pond and a 1000 acre area surrounding it will have more than 900 homes and a population of 1,800.

An environmental concern in this subwatershed is nitrogen loading into Bourne's Pond, caused primarily by septic systems. Findings from the 1997 field season of the Falmouth Pond Watchers indicate that only the uppermost portions of the pond and Israel's Cove show signs of nutrient loading. The pond's nutrient related water quality did not appear to be declining at that time, although portions of the pond did periodically experience stressfully low conditions of bottom water dissolved oxygen.

Consultants hired by the Town of Falmouth concluded that two-thirds of the nitrogen-loading to Bourne's Pond, which causes significant water quality impairments, is caused by home septic systems and fertilizer use, and that eliminating the great majority of that nitrogen-load will restore reasonably acceptable quality to the pond. The options explored for remedy were administrative measures, such as bylaws and regulations and engineered measures, such as new septic systems, sewers with central treatment plants, and constructed wetlands.

Of additional concern is the Ashumet Nitrogen Plume, which emanates from a now-closed wastewater treatment plant on the Massachusetts Military Reservation and flows into this subwatershed. Past oil, fuel, chemical, and hazardous waste disposal activities on the base have created ground water pollution plumes. The Air Force Center for Environmental Excellence (AFCEE) is investigating and addressing this groundwater pollution. The Ashumet Plume is heading towards Bourne's Pond but has not yet reached it. The nitrogen in the plume will increase nitrogen loading in Bourne's, Great, and Green Ponds by about 2%. In 1998, the US Air Force gave Falmouth \$8.5 million to fund measures to offset nitrogen loading in these ponds. The Ashumet Plume Citizens Committee was appointed by the town to make recommendations for such offset measures.

Part of Bourne's Pond was open to shellfishing in the summer of 2000. Because of poor water quality in many Falmouth waterbodies, this was one of the only open areas.

There are no public sewers in this subwatershed but public water is available.

Stewards:

- Ashumet Plume Citizens Committee
- Falmouth Associations Concerned with Estuaries and Saltponds (FACES)
- Falmouth Pond Watchers

Studies conducted in the watershed:

- DMF completed a Sanitary Survey along the Bourne's Pond shoreline in Summer 1991. The survey identified five locations where there is evidence of stormwater discharge or road runoff into the pond. The pond shows signs of being impacted by runoff.
- Water Quality Monitoring of Falmouth's Coastal Ponds: Results from the 1997 Season. Falmouth Pond Watchers. June 1998. A similar document is also available the 1994-95 and 1996 sampling seasons.

- Ashumet Plume Nitrogen Offset Program. Report of the Ashumet Plume Citizens Committee: Water Quality Assessment, Conclusions, and Program Options. October 27, 2000. (View history, progress reports, and recommendations of the program at www.geocities.com/ashumet2001).
- Falmouth Property Tract 19 was evaluated for its suitability for future water supply sites in the Phase II Priority Land Acquisition Assessment Project conducted by the Cape Cod Commission. March 2001.
- Bourne's Pond was selected as a priority area for the Estuaries Project – Southeastern Massachusetts Embayment Restoration, funded by the state and UMass-Dartmouth. The goal of the project is to develop critical nutrient loading thresholds for each embayment to aid in water resources planning that will support federal requirements for the development of Total Maximum Daily Loads for impaired surface waters. This area will be evaluated in 2002.
- Cape Cod Atlas of Tidally Restricted Salt Marshes. 2001. Cape Cod Commission.

Who is collecting water quality data and where:

- Falmouth Pond Watchers (view data at www.state.ma.us/czm/falmouth_pond_watchers.htm). Sampling is done once every two weeks in July and August for depth; salinity; dissolved oxygen; water temperature, clarity, and color; and a host of nutrients including nitrate-nitrogen, nitrite-nitrogen, and phosphate.
- The United States Geological Survey maintains a stream flow gauge in Bourne's Pond, collecting data that will be used in the Massachusetts Estuaries Project.

Management actions taken:

- The Ashumet Plume Citizens Committee proposed the creation of a watershed management district covering parts of Hatchville, West Falmouth, and Waquoit, in order to reduce the nitrogen loading that is occurring in Great, Green, and Bourne's Ponds.
- The Ashumet Plume Citizens Committee recommended in December 2001 that the Town of Falmouth spend up to \$2.5 million or more to buy the cranberry bogs at the headwaters of Green and Bourne's Ponds and use these wetlands to prevent nitrogen from reaching the ponds.

Subwatershed facts: (For data sources see Appendix)

- 21 E sites: none
- Solid waste sites: none
- Interim Wellhead Protection Areas (IWPAs): 2
- Percent of the undeveloped land that is protected (according to 1985/1990 data): 26.9%
- Acres of existing wetlands: 38
- Certified vernal pools: none
- Named ponds: Bourne's, Frog, Ashumet
- Named rivers or creeks: none
- Shellfish growing areas: The upper reaches of Bourne's Pond are conditionally approved and the rest of the pond is approved for shellfish harvesting.
- This watershed contains Natural Heritage and Endangered Species Program (NHESP) Estimated Habitats of Rare Wildlife.

Priorities:

- Develop critical nutrient loading thresholds for Bourne's Pond to aid in water resources planning and the development of TMDLs.

- Town of Falmouth needs to implement long term solutions to nutrient overloading in this coastal pond to offset threats to water quality, recreational uses of the pond, habitat, and aesthetics.
- Town of Falmouth should refer to the DMF Sanitary Survey (1991) to prioritize the five sites identified for stormwater remediation along the Bourne's Pond shoreline.
- The Falmouth Pond Watchers 1997 field season report suggested that a more complete evaluation of the nutrient balance and health of Israel's Cove may be needed over the next several years.
- Implement BMP on storm drain on Route 28 draining into Bourne's Pond. Work with Massachusetts Highway Department to correct. (NRCS)
- Implement those salt marsh restoration projects identified in the 2001 *Cape Cod Atlas of Tidally Restricted Salt Marshes* that have been evaluated and prioritized by the town. The site in this subwatershed is the Menauhant Road restriction of channel into Bourne's Pond (Site FA-7).
- Acquire open space. Parcels considered a priority for acquisition for water supply protection and development: Falmouth Tracts 4, 6, 11, 12, 19, 26, 33, and 35 were ranked as having medium or high water supply development potential in the Cape Cod Commission's *Priority Land Acquisition Assessment Project* (April 1999). These tracts are located throughout the Town of Falmouth.

Recreation:

Camping areas: none

Golf courses: none

Pathways and trails:

- www.capecodcommission.org/pathways/trailguide.htm

Public access:

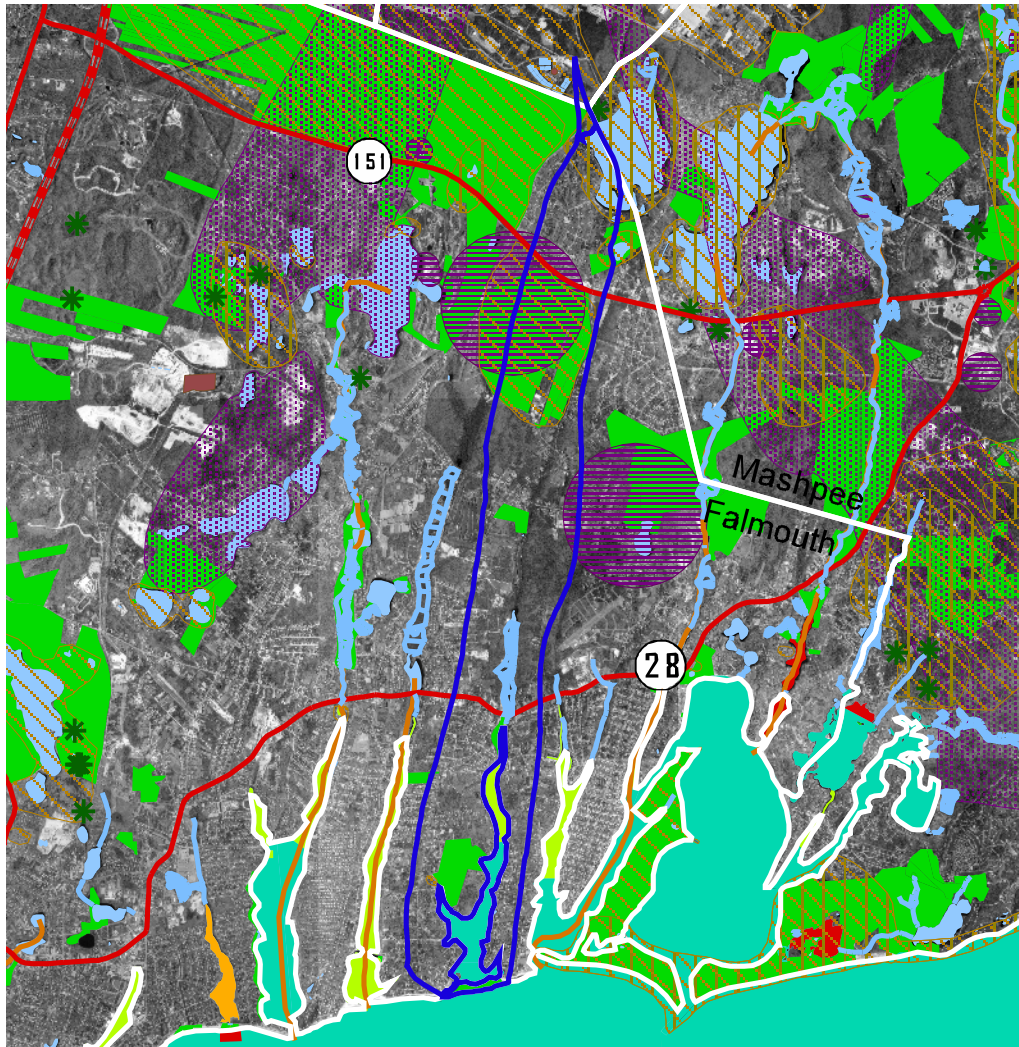
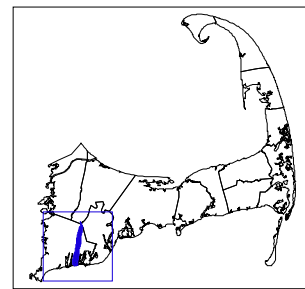
- www.state.ma.us/dfwele/pab/pabSEmap.htm

Public beaches and landings:

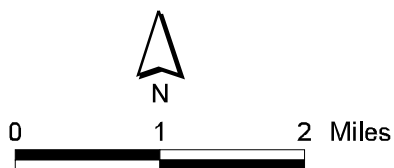
- Menauhant Road Beach

Bournes Pond

Falmouth, MA



Watershed Resources



Natural Heritage and Endangered Species Program Data

- Certified Vernal Pool
- Priority Habitats of Rare Species
- Estimated Habitats of Rare Species

Groundwater Protection Areas

- Interim Wellhead Protection Area
- Zone II
- Solid Waste Facility

Watershed Boundary

Anadromous Fish Run

Shellfish Growing Areas

- APPROVED
- CONDITIONALLY APPROVED
- MANAGEMENT CLOSURE
- PROHIBITED
- RESTRICTED
- Open Space

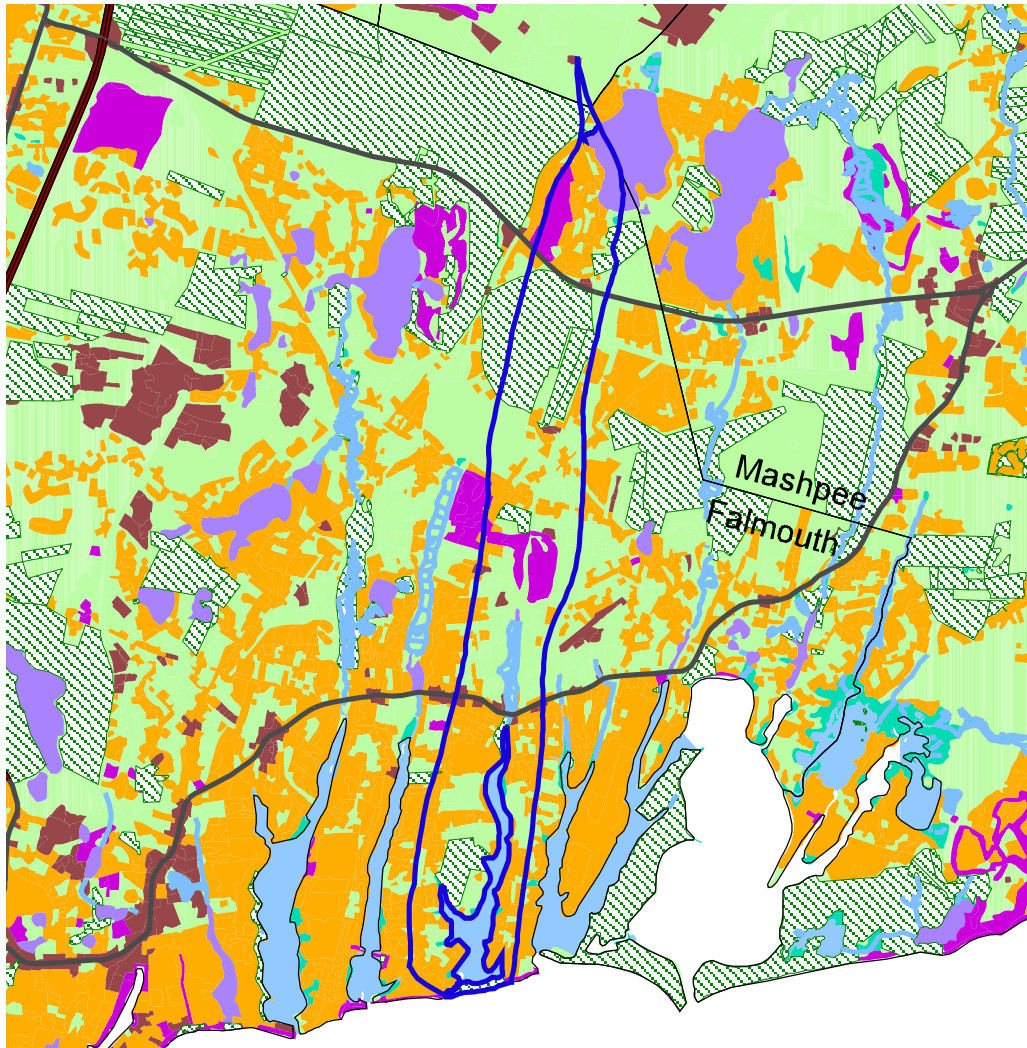
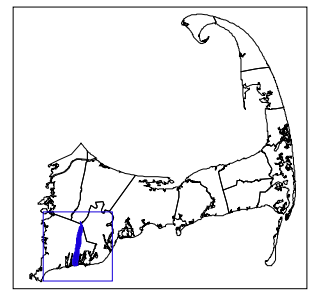
Streams

Ponds

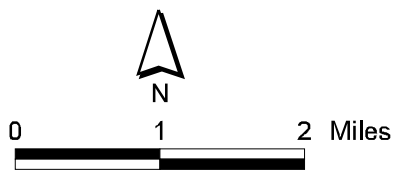
Roads

Bournes Pond

Falmouth, MA



Land Use



Land Use

